

REMARKS

Claims 1, 3-8, and 10-13 are pending in the application. New claim 13 has been added.

Claim Rejections - 35 U.S.C. § 102

Claims 1, 3, 8, 10, and 12 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Mishra et al. (USP 5,805,599). This rejection is respectfully traversed.

The Examiner alleges, in the Office Action, that Mishra discloses that "the utilization factor is determined by detecting time intervals in which the user does not exploit the transmission capacity allocated to him." To support his position, he refers to col. 3, lines 52-64 and col. 4, lines 12-27.

Mishra states in col. 3, lines 57-64 that:

As noted, the retention of channel allocation for sources 20 that remain idle for a period of time ("idle sources") is undesirable because that bandwidth is wasted, and never recovered. Similarly, a source that is "lazy," or not sending at its allocated rate, also causes under-utilization of the network 100. Network-wide utilization could be increased, since wasted bandwidth may be reallocated to sources that may in fact use the unused bandwidth.

In other words, Mishra states that it is not desired to have unused time intervals (users that do not at all utilize the bandwidth allocated to them) because this bandwidth is lost and cannot be retrieved. If the unused bandwidth could be allocated to other users, the overall network utilization could be improved.

Mishra also states in col. 4, lines 12-27 that:

First, the switch 40 estimates the actual rate of a connection to a source 20, to derive a smoothed average rate. The method by which switch 40 computes the average is to use an exponentially smoothed average, to derive the rate. The justification for using such an average in the switch 40 of the invention is as follows.

In terms of rationale for the approach of using exponential, rather than for instance linear, averages to estimate rate, the average could be based on the simple time elapsed between receipt of 2 RM cells (in which 31 data cells are assumed to be sent by source 20). This averaging technique is, however, prone to considerable noise, and also leads to poor behavior for idle sources. This is because a long idle time before the sending of an RM cell, results in the average of the rate immediately decreasing to a very small value.

Here, Mishra is alleging that the actual rate of a connection (i.e., the "utilization factor") can be estimated in different ways. As stated in col. 4, lines 43-54, a preferred way is to estimate the actual rate as a running average by means of an exponentially smoothed average of the weighted sum of the previous running average and the current sample S (with the weighting factor β). The value S is the estimated value of the instantaneous transmission rate and corresponds to the inverse of the time between two RM (Resource Management) cells. That is the exponentially smoothed average rate ACR at the time $t+1$ is determined based on the average rate ACR at the time t as shown in equation 1 in col. 4, line 54: $ACR(t+1) = \beta * ACR(t) + (1-\beta) * S$.

As outlined in col. 4, lines 18-24, another simple possibility to determine the average rate would be a linear smoothed average, for instance, based on the time elapsed between two RM cells. But Mishra states that such a linear estimation is not optimal since the average value can drop to very low values for idle sources (sources with idle times, where the source does not send data all the time).

Another way of determining the average value is based on a "moving window" as described in col. 4, lines 32-42 by tracking the number of cells that arrive over a give time. Again, Mishra says that this method is not used because it does not provide a proper average with sources that are sending "bursty" data with relatively long idle periods in between.

Accordingly, unlike the claimed invention of the present application, the determination of the average rate, that is the utilization factor, is based on the inverse of the time elapsed between

two RM cells and not on the detection of idle times, where no data is sent. Mishra does not disclose that these unused time intervals are detected, but discloses the detection of time elapsed between two RM cells.

Moreover, in col. 4, lines 62-66, Mishra mentions that it is an advantage to detect these RM cells instead of detecting the data cells because it helps reduce the dependency of the average rate on the received data thereby increasing the accuracy of the estimated average rate (particularly for low-usage sources, that is sources with idle times). Or in other words, Mishra avoids the detection of data cells in order to reduce the dependency of the utilization factor on the received data.

In summary, Mishra merely discloses that there is a correlation of the utilization factor of a source with the idle time of that source. Mishra further discloses several possibilities to determine the utilization factor. Some of them are based on the detection of the time elapsed between two RM cells and one is based on the detection of data cells.

Mishra, however, does not disclose or suggest that the "utilization factor is determined by detecting time intervals in which the user does not exploit the transmission capacity allocated to him," as required in claim 1.

Claim 3, dependent on claim 1, is allowable at least for its dependency on claim 1.

Claim 8 is allowable at least for the similar reasons as stated in the foregoing with regard to claim 1.

Claims 10 and 12, dependent on claim 8, are allowable at least for their dependency on claim 8.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

Claim Rejections - 35 U.S.C. § 103

(a) Claims 4 and 5 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Mishra in view of Eriksson (U.S. Pub. 2003/0103478A1). This rejection is respectfully traversed.

Claims 4 and 5, indirectly dependent on claim 1, are allowable at least for their dependency on claim 1.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

(b) Claim 6 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Mishra in view of Agin (USP 6,564,067). This rejection is respectfully traversed.

Claim 6, indirectly dependent on claim 1, is allowable at least for its dependency on claim 1.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

(c) Claims 7 and 11 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Mishra in view of Zellner et al. (U.S.P. 6,069,882). This rejection is respectfully traversed.

Claim 7, variously dependent on claim 1, is allowable at least for its dependency on claim 1.

Claim 11, dependent on claim 8, is allowable at least for its dependency on claim 8.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

New Claim

New claim 13 is allowable at least because none of the prior art of record discloses or suggests that the "utilization factor is determined by detecting the number of time intervals in which the user does not exploit the transmission capacity allocated to him."

It is respectfully submitted that this limitation is sufficiently supported at least by the descriptions in page 3, lines 20-22 and page 4, lines 17-19 of the specification.

A favorable determination by the Examiner and allowance of claim 13 is earnestly solicited.

Conclusion

If the Examiner has any questions concerning this application, the Examiner is requested to contact Maki Hatsumi, Reg. No. 40,417 at the telephone number of (703) 205-8000.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

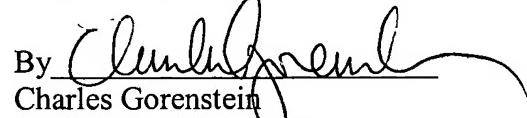
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Accordingly, in view of the above amendments and remarks, reconsideration of the rejections and objections, and allowance of the pending claims are earnestly solicited.

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Respectfully submitted,

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